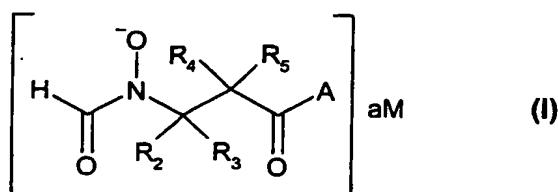


CLAIMS:

1. A crystalline salt of formula (I):



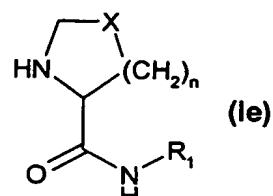
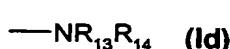
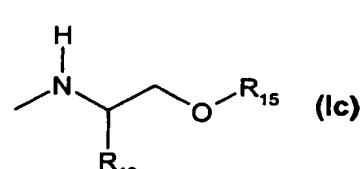
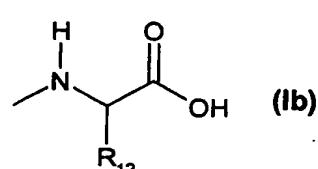
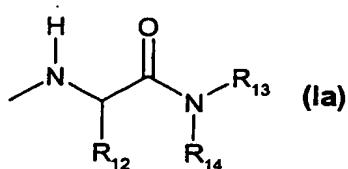
wherein

M is a mono- or di-valent metal;

a is 1/2 or 1;

each of R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub>, independently, is hydrogen or an aliphatic group, or (R<sub>2</sub> or R<sub>3</sub>) and (R<sub>4</sub> or R<sub>5</sub>), collectively, form a C<sub>4</sub>-C<sub>7</sub>cycloalkyl;

A is of the formula (Ia), (Ib), (Ic), (Id) or (Ie)



wherein

R<sub>12</sub> is the side-chain of a natural or a non-natural alpha amino acid;

R<sub>13</sub> and R<sub>14</sub>, independently, represent hydrogen, or optionally substituted C<sub>1</sub>-C<sub>8</sub>alkyl, cycloalkyl, aryl, aryl(C<sub>1</sub>-C<sub>6</sub>alkyl), heterocyclic or heterocyclic(C<sub>1</sub>-C<sub>6</sub>alkyl);

R<sub>15</sub> is hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl or an acyl group;

X is -CH<sub>2</sub>-, -S-, -CH(OH)-, -CH(OR)-, -CH(SH)-, -CH(SR)-, -CF<sub>3</sub>-, -C=N(OR)- or -CH(F)-, wherein R is alkyl;

R<sub>1</sub> is aryl or heteroaryl; and

n is 0-3, provided that when n is 0, X is -CH<sub>2</sub>-.

2. The crystalline salt of Claim 1, wherein A is formula (Ie).

3. The crystalline salt of Claim 3,

wherein

a is  $\frac{1}{2}$ ; and

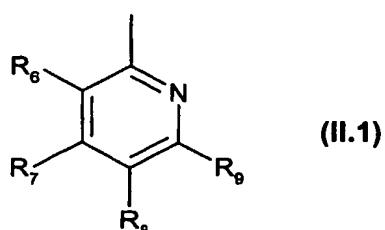
M is Ca, Zn or Mg.

4. The crystalline salt of Claim 2 or 3,

wherein

A is of formula (Ie); and

R<sub>1</sub> is a heteroaryl of formula (II.1)



wherein

R<sub>6</sub>, R<sub>7</sub> and R<sub>9</sub> are hydrogen; and

R<sub>8</sub> is methyl or trifluoromethyl; or

R<sub>6</sub>, R<sub>7</sub> and R<sub>8</sub> are hydrogen; and

R<sub>9</sub> is fluoro; or

R<sub>6</sub>, R<sub>8</sub> and R<sub>9</sub> are hydrogen; and

R<sub>7</sub> is ethyl or methoxy; or

R<sub>7</sub>, R<sub>8</sub> and R<sub>9</sub> are hydrogen; and

R<sub>6</sub> is hydroxy; or

R<sub>7</sub> and R<sub>8</sub> are hydrogen;

R<sub>6</sub> is methoxy; and

R<sub>9</sub> is methyl.

5. The crystalline salt of Claim 4,

wherein

R<sub>6</sub>, R<sub>8</sub> and R<sub>9</sub> are hydrogen; and

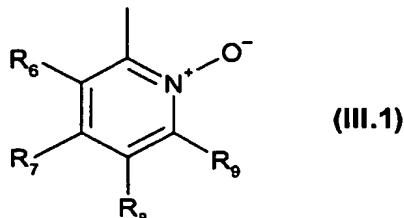
R<sub>7</sub> is ethyl.

6. The crystalline salt of Claim 2 or 3,

wherein

A is of formula (Ie); and

R<sub>1</sub> is of the formula (III.1)



wherein

R<sub>6</sub>, R<sub>7</sub> and R<sub>9</sub> are hydrogen; and

R<sub>8</sub> is fluoro or trifluoromethyl; or

R<sub>6</sub>, R<sub>8</sub> and R<sub>9</sub> are hydrogen; and

R<sub>7</sub> is ethyl.

7. The crystalline salt of Claim 6,

wherein

R<sub>6</sub>, R<sub>7</sub> and R<sub>9</sub> are hydrogen; and

R<sub>8</sub> is fluoro.

8. The crystalline salt of Claim 7,

wherein

a is ½; and

M is Ca, Zn or Mg.

9. The crystalline salt of Claim 1, containing at least 2% water.

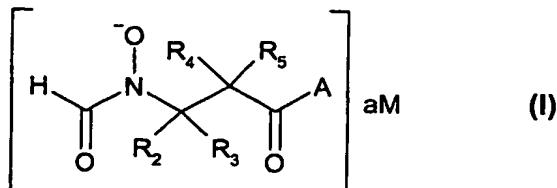
10. The crystalline salt of Claim 1, containing about 8% water to about 9% water.

11. The crystalline salt of Claim 1, wherein the X-ray powder diffraction pattern comprises crystalline peaks with 2-theta angles (Cu-K<sub>α</sub> radiation) at least five of the following positions:

6.8 ± 0.1, 13.7 ± 0.1, 12.2 ± 0.1, 14.5 ± 0.1, 15.2 ± 0.1, 18.1 ± 0.1, 20.6 ± 0.1, 22.0 ± 0.1, 22.4 ± 0.1, 24.5 ± 0.1 and 30.9 ± 0.1.

12. A hydrated crystalline magnesium salt of 1-{2-*R*-[(formyl-hydroxy-amino)-methyl]-hexanoyl}-pyrrolidine-2-S-carboxylic acid (5-fluoro-1-oxy-pyridin-2-yl)-amide, in particular a corresponding tetrahydrate salt.

13. A process for preparing a crystalline salt of the formula (I)



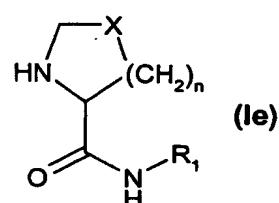
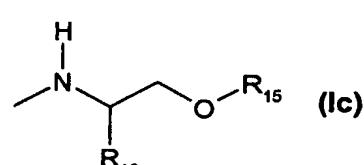
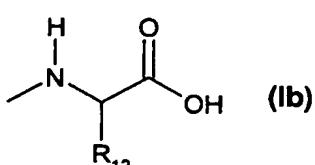
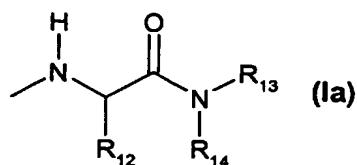
wherein

M is a mono- or di-valent metal;

a is 1/2 or 1;

each of R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub>, independently, is hydrogen or an aliphatic group, or (R<sub>2</sub> or R<sub>3</sub>) and (R<sub>4</sub> or R<sub>5</sub>), collectively, form a C<sub>4</sub>-C<sub>7</sub>cycloalkyl;

A is of the formula (Ia), (Ib), (Ic), (Id) or (Ie)



wherein

R<sub>12</sub> is the side-chain of a natural or a non-natural alpha amino acid;

R<sub>13</sub> and R<sub>14</sub>, independently, represent hydrogen, or optionally substituted C<sub>1</sub>-C<sub>6</sub>alkyl, cycloalkyl, aryl, aryl(C<sub>1</sub>-C<sub>6</sub>alkyl), heterocyclic or heterocyclic(C<sub>1</sub>-C<sub>6</sub>alkyl);

R<sub>15</sub> is hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl or an acyl group;

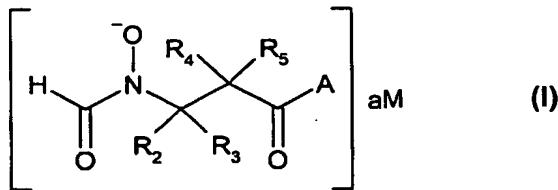
X is -CH<sub>2</sub>-, -S-, -CH(OH)-, -CH(OR)-, -CH(SH)-, -CH(SR)-, -CF<sub>2</sub>-, -C=N(OR)- or -CH(F)-, wherein R is alkyl;

R<sub>1</sub> is aryl or heteroaryl; and

n is 0-3, provided that when n is 0, X is -CH<sub>2</sub>-;

comprising dissolving the amorphous, non-salt form of the compound of formula (I) in a suitable solvent, contacting the dissolved compound with a base and with a metal salt, under conditions suitable to form the desired crystalline salt of formula (I).

14. A method for treating and/or preventing an infectious disorder in a subject, comprising administering to the subject an effective amount of a crystalline salt of formula (I):



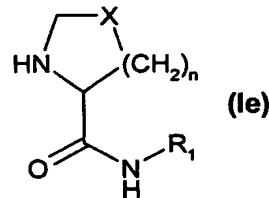
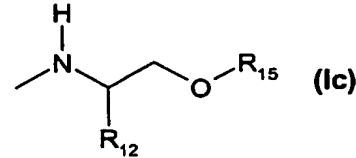
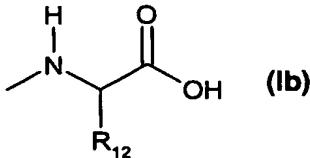
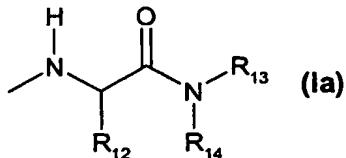
wherein

M is a mono- or di-valent metal;

a is  $\frac{1}{2}$  or 1;

each of R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub>, independently, is hydrogen or an aliphatic group, or (R<sub>2</sub> or R<sub>3</sub>) and (R<sub>4</sub> or R<sub>5</sub>), collectively, form a C<sub>4</sub>-C<sub>7</sub>cycloalkyl;

A is of the formula (Ia), (Ib), (Ic), (Id) or (Ie)



wherein

R<sub>12</sub> is the side-chain of a natural or a non-natural alpha amino acid;

R<sub>13</sub> and R<sub>14</sub>, independently, represent hydrogen, or optionally substituted C<sub>1</sub>-C<sub>8</sub>alkyl, cycloalkyl, aryl, aryl(C<sub>1</sub>-C<sub>6</sub>alkyl), heterocyclic or heterocyclic(C<sub>1</sub>-C<sub>6</sub>alkyl);

R<sub>15</sub> is hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl or an acyl group;

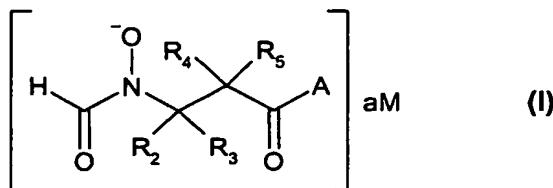
X is -CH<sub>2</sub>-, -S-, -CH(OH)-, -CH(OR)-, -CH(SH)-, -CH(SR)-, -CF<sub>2</sub>-, -C=N(OR)- or -CH(F)-, wherein R is alkyl;

R<sub>1</sub> is aryl or heteroaryl; and

n is 0-3, provided that when n is 0, X is -CH<sub>2</sub>-; or a prodrug thereof.

15. The method of Claim 14, comprising co-administration of a therapeutically effective amount of the crystalline salt of formula (I), or a prodrug thereof, and a second therapeutic agent.

16. A pharmaceutical composition comprising a crystalline salt of formula (I),



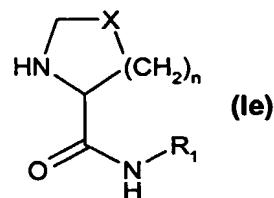
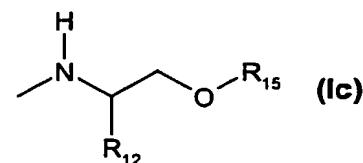
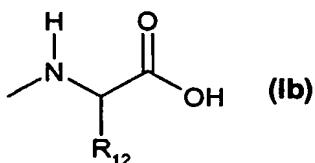
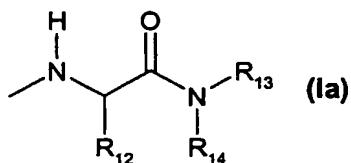
wherein

M is a mono- or di-valent metal;

a is ½ or 1;

each of R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub>, independently, is hydrogen or an aliphatic group, or (R<sub>2</sub> or R<sub>3</sub>) and (R<sub>4</sub> or R<sub>5</sub>), collectively, form a C<sub>4</sub>-C<sub>7</sub>cycloalkyl;

A is of the formula (Ia), (Ib), (Ic), (Id) or (Ie)



wherein

R<sub>12</sub> is the side chain of a natural or a non-natural alpha amino acid;

R<sub>13</sub> and R<sub>14</sub>, independently, represent hydrogen, or optionally substituted C<sub>1</sub>-C<sub>8</sub>alkyl, cycloalkyl, aryl, aryl(C<sub>1</sub>-C<sub>6</sub>alkyl), heterocyclic or heterocyclic(C<sub>1</sub>-C<sub>6</sub>alkyl);

R<sub>15</sub> is hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl or an acyl group;

X is -CH<sub>2</sub>-, -S-, -CH(OH)-, -CH(OR)-, -CH(SH)-, -CH(SR)-, -CF<sub>2</sub>-, -C=N(OR)- or -CH(F)-, wherein R is alkyl;

R<sub>1</sub> is aryl or heteroaryl; and

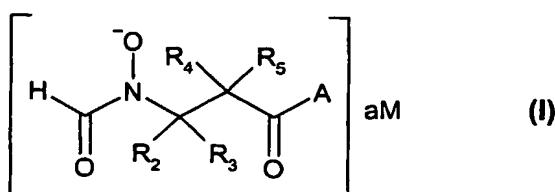
n is 0-3, provided that when n is 0, X is -CH<sub>2</sub>-;

or a prodrug thereof,

in association with a pharmaceutically acceptable diluent or carrier therefor.

17. A composition according to claim 16 further comprising a second therapeutic agent.

18. Use of a crystalline salt of formula (I):



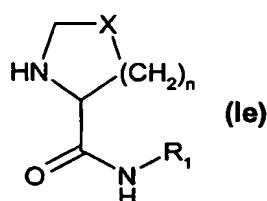
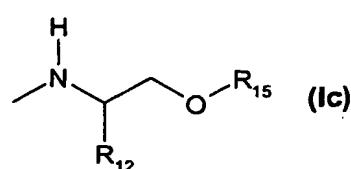
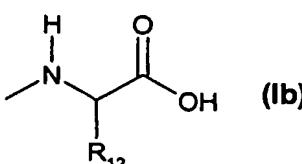
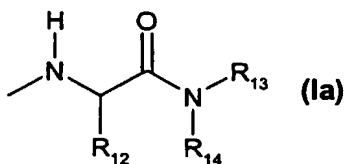
wherein

M is a mono- or di-valent metal;

a is 1/2 or 1;

each of R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub>, independently, is hydrogen or an aliphatic group, or (R<sub>2</sub> or R<sub>3</sub>) and (R<sub>4</sub> or R<sub>5</sub>), collectively, form a C<sub>4</sub>-C<sub>7</sub>cycloalkyl;

A is of the formula (Ia), (Ib), (Ic), (Id) or (Ie)



wherein

R<sub>12</sub> is the side-chain of a natural or a non-natural alpha amino acid;

R<sub>13</sub> and R<sub>14</sub>, independently, represent hydrogen, or optionally substituted C<sub>1</sub>-C<sub>8</sub>alkyl, cycloalkyl, aryl, aryl(C<sub>1</sub>-C<sub>8</sub>alkyl), heterocyclic or heterocyclic(C<sub>1</sub>-C<sub>8</sub>alkyl);

$R_{15}$  is hydrogen,  $C_1$ - $C_6$ alkyl or an acyl group;

$X$  is  $-CH_2-$ ,  $-S-$ ,  $-CH(OH)-$ ,  $-CH(OR)-$ ,  $-CH(SH)-$ ,  $-CH(SR)-$ ,  $-CF_2-$ ,  $-C=N(OR)-$  or  $-CH(F)-$ , wherein  $R$  is alkyl;

$R_1$  is aryl or heteroaryl; and

$n$  is 0-3, provided that when  $n$  is 0,  $X$  is  $-CH_2-$ ;

or a prodrug thereof, optionally together with a second therapeutical agent, in the manufacture of a medicament method for treating and/or preventing an infectious disorder.